AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Claims 1-163. (Cancelled).

164. **(Currently amended)** A physically cross-linked gel produced by the method of comprising: dissolving a **biocompatible** vinyl polymer in a first solvent to form a vinyl polymer solution; introducing the vinyl polymer solution in a volume of a second solvent to cause gelation, the second solvent having a higher Flory interaction parameter at a process temperature than the vinyl polymer solution **to form a biocompatible cross-linked gel, and wherein the cross-linked gel is suitable for *in vivo* use**.

165. **(Original)** The physically cross-linked gel of claim 164 wherein the vinyl polymer is polyvinyl alcohol having a molecular weight of about 50 kg/mol to about 300 kg/mol.

166. **(Original)** The physically cross-linked gel of claim 164 wherein the vinyl polymer solution is an aqueous solution of about 10 weight percent to about 30 weight percent polyvinyl alcohol based on the weight of the solution.

167. **(Original)** The physically cross-linked gel of claim 164 wherein the vinyl polymer solution is introduced in an aqueous solution of sodium chloride from about 1.5 molar to about 6.0 molar.

168. **(Original)** The physically cross-linked gel of claim 164 wherein the vinyl polymer solution is introduced in an aqueous solution of sodium chloride from about 1.5 molar to about 3.0 molar.

169. **(Original)** The physically cross-linked gel of claim 164 wherein the vinyl polymer solution is introduced in an aqueous solution of sodium chloride from about 1.75 molar to about 6.0 molar.

170. **(Original)** The physically cross-linked gel of claim 164 further comprising hyaluronic acid.

171. **(Original)** The physically cross-linked gel of claim 164 further comprising polyacrylic acid.

172. **(Original)** A physically cross-linked hydrogel substantially free of chemical crosslinkers.

173. **(Original)** A physically cross-linked hydrogel comprising at least about 10 weight percent polyvinyl alcohol solution gelled by immersion in about 2 to about 3 molar sodium chloride wherein the hydrogel is about 14 percent to about 21 percent physically crosslinked.

174. **(Original)** The physically cross-linked hydrogel of claim 172 wherein the gel comprises about 12 to about 29 percent polyvinyl alcohol.

175. **(Original)** The method of claim 173 wherein the vinyl polymer solution contains one or more non-gelling components.

176. **(Original)** The physically cross-linked hydrogel of claim 172 further comprising hyaluronic acid.

177. **(Original)** The physically cross-linked hydrogel of claim 172 further comprising polyacrylic acid.

178. **(Original)** An article of manufacture comprising a vinyl polymer gel having at least one gradient of mechanical properties.

179. **(Original)** A one-piece prosthetic intervertebral disk comprising a polyvinyl polymer hydrogel wherein the distribution of mechanical properties of the one-piece prosthetic intervertebral disk approximates the spatial distribution of the mechanical properties of the combination of the nucleus pulposis and the annulus fibrosis of the natural intervertebral disk.

180. **(Original)** The physically crosslinked gel of claim 164 further comprising a therapeutic agent.

181. **(New)** A prosthetic intervertebral disk comprising a biocompatible vinyl polymer hydrogel having a desired physical property, wherein the biocompatible

vinyl polymer hydrogel is formed by a method comprising the steps of: providing a vinyl polymer solution comprising a vinyl polymer dissolved in a first solvent; mixing the vinyl polymer solution with a gellant, wherein the resulting mixture has a higher Flory interaction parameter than the vinyl polymer solution; inducing gelation of the mixture of vinyl polymer solution and gellant; controlling the gelation rate to form a viscoelastic solution, wherein workability is maintained for a predetermined period, thereby making a biocompatible vinyl polymer hydrogel having the desired physical property; and wherein the biocompatible vinyl polymer hydrogel is suitable for *in vivo* use.

182. **(New)** A prosthetic intervertebral disk comprising a biocompatible vinyl polymer hydrogel having a desired physical property, wherein the biocompatible vinyl polymer hydrogel is formed by a method comprising the steps of: dissolving a vinyl polymer in a first solvent to form a vinyl polymer solution; and introducing the vinyl polymer solution in a volume of a second solvent to cause gelation, the second solvent having a higher Flory interaction parameter at a process temperature then the vinyl polymer solution to form a biocompatible gel, wherein the property of the gel is controlled by controlling the rate of the introduction of the vinyl polymer solution to the second solvent, and wherein the biocompatible gel is suitable for *in vivo* use.